

# **LOUISIANA DEPARTMENT OF WILDLIFE & FISHERIES**



**OFFICE OF FISHERIES  
INLAND FISHERIES SECTION**

**PART VI -B**

**WATERBODY MANAGEMENT PLAN SERIES**

**NEW ORLEANS CITY PARK**

**WATERBODY EVALUATION &  
RECOMMENDATIONS**

# **CHRONOLOGY**

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# **WATERBODY EVALUATION**

## **STRATEGY STATEMENT**

### Recreational

The fish population of the New Orleans City Park lagoon system is managed to provide quality recreational fishing opportunities in an urban setting to promote interest and participation in recreational fishing.

### Commercial

No commercial strategy is applicable in New Orleans City Park. Commercial fishing is prohibited.

## **EXISTING HARVEST REGULATIONS**

### Recreational

Recreational fishing regulations may be viewed at the link below:

<http://www.wlf.louisiana.gov/fishing/regulations>

### Commercial

Commercial fishing is prohibited and enforced by the City Park Police Department.

Commercial fishing regulations may be viewed at the link below:

<http://www.wlf.louisiana.gov/fishing/regulations>

### Species of Special Concern

Current Louisiana law is in need of modification to allow for public cooperation in the removal of the fish species from public waters. Anglers should be allowed to possess harvested Rio Grande Cichlids as long as the fish has been sacrificed. Under Louisiana Revised Statutes, Title 56, section 319 (State of Louisiana 2009) reads as:

319. Exotic fish; importation, sale, and possession of certain exotic species prohibited; permit required; penalty

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D. No person shall have in possession or sell in this state a piranha or Rio Grande Cichlid; except that, piranha may be possessed and displayed at the Aquarium of the Americas, Audubon Institute, New Orleans, as authorized by a special permit issued by the department, under conditions the department deems necessary to prevent their introduction into waters of the state. Neither the permit nor the conditions and requirements thereof shall be required to be adopted pursuant to the provisions of the Administrative Procedure Act.

In 2012, the Louisiana Wildlife and Fisheries Commission legalized possession of Rio Grande Cichlids and apple snails if killed immediately upon possession (LAC 76:VII.199).

## SPECIES EVALUATION

### Recreational

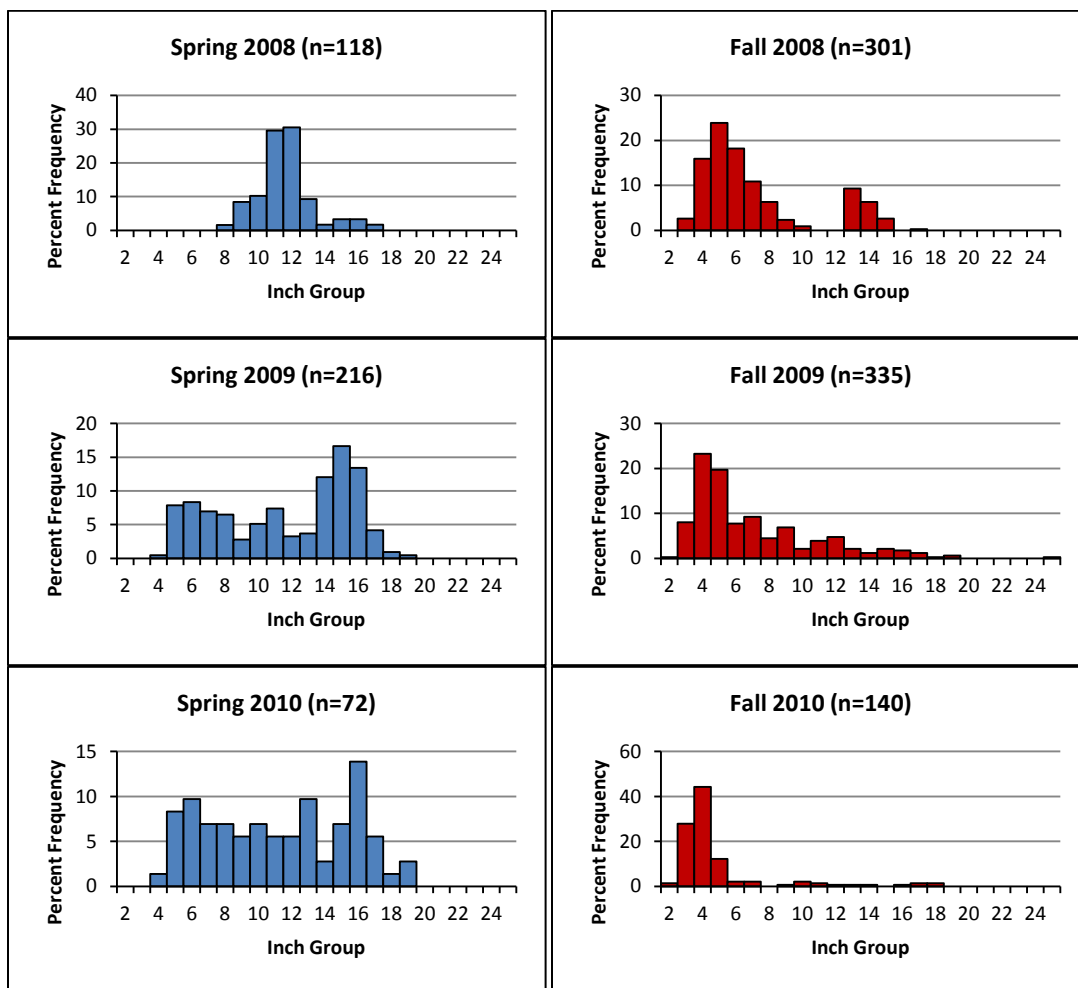
In 2008, the Louisiana Department of Wildlife and Fisheries initiated standardized sampling in the New Orleans City Park lagoons.

### Largemouth Bass

#### Relative abundance, size frequency, and structural indices-

Largemouth bass (LMB) are targeted for evaluation since they are a species indicative of the overall fish population due to their high position in the food chain. Electrofishing sampling is used as an efficient tool to sample LMB populations. With the possible exception of larger fish, electrofishing data provides the best indicator of LMB population characteristics.

Annual length frequency distributions (Figure 1) and mean total catch rates (Figure 2)) are provided below. LMB relative abundance is measured in catch per hour (CPH) of electrofishing effort. Results from 2008 through 2013 indicate a healthy, self-sustained bass population. Fall sampling results indicate successful reproduction. Continued monitoring will result in a more robust data set that can be used to describe the population in greater detail.



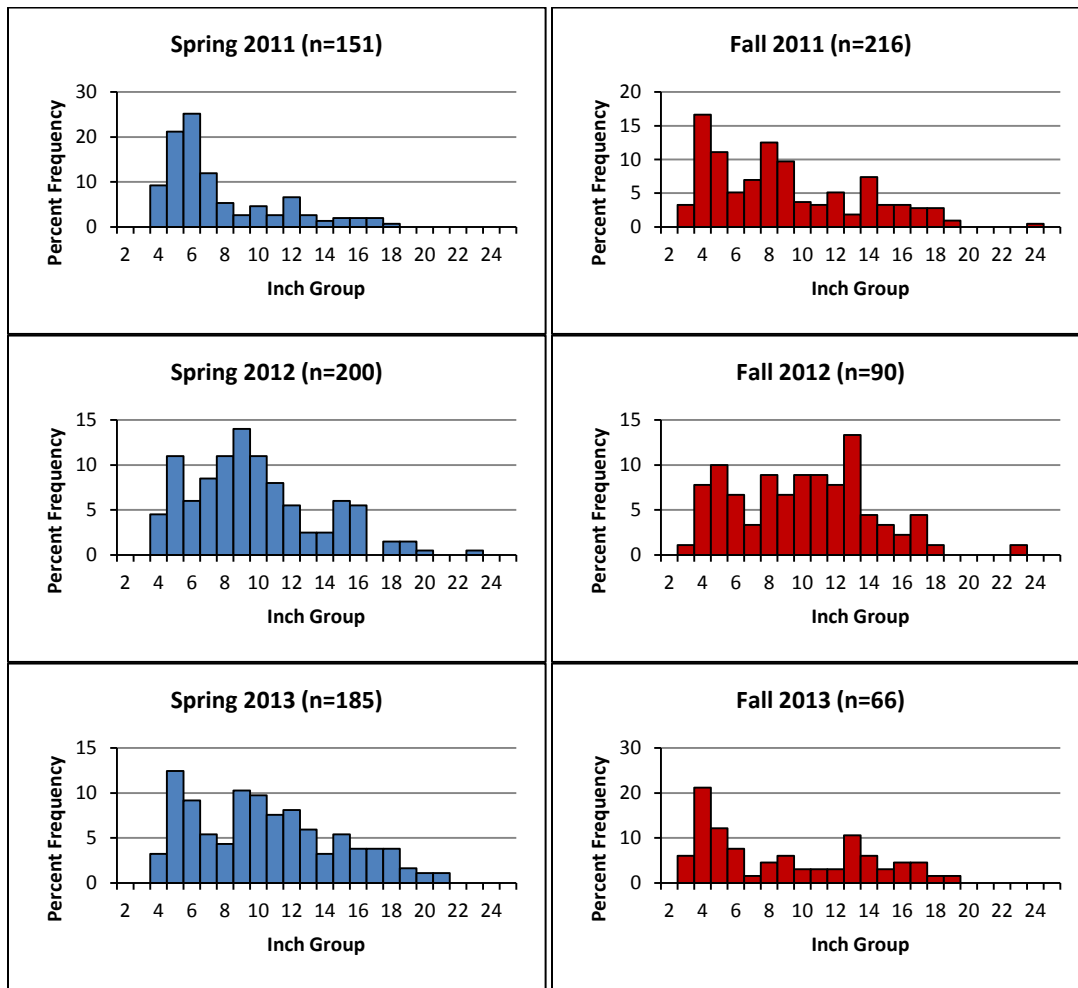


Figure 1. Annual spring and fall length distributions in percent frequency by inch groups of LMB caught in the NOCP lagoon system in electrofishing samples for 2008-2013.

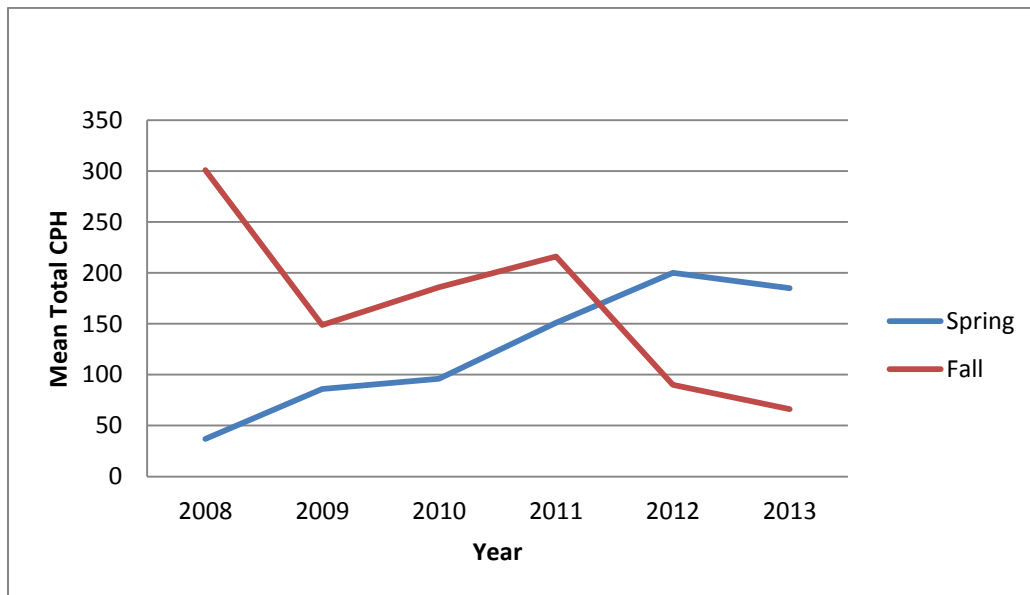


Figure 2. Mean total electrofishing catch per hour of LMB in the NOCP lagoon system.

Proportional stock density (PSD) and relative stock density (RSD) are indices used to numerically describe length-frequency data (Figures 3 and 4). Proportional stock density compares the number of fish of quality size (greater than 12 inches for largemouth bass) to the number of bass of stock size (greater than 8 inches). For 2013, 54% of the bass stock (fish over 8 inches) in the sample was at least 12 inches or longer.

$$\text{PSD} = \frac{\text{Number of bass} > 12 \text{ inches}}{\text{Number of bass} > 8 \text{ inches}} \times 100$$

Relative stock density ( $\text{RSD}_{15}$ ) is the proportion of largemouth bass in a stock (fish over 8 inches) that are 15 inches or longer. For 2013, 29% of bass over 8 inches in the sample were at least 15 inches or longer.

$$\text{RSD}_{15} = \frac{\text{Number of bass} > 15 \text{ inches}}{\text{Number of bass} > 8 \text{ inches}} \times 100$$

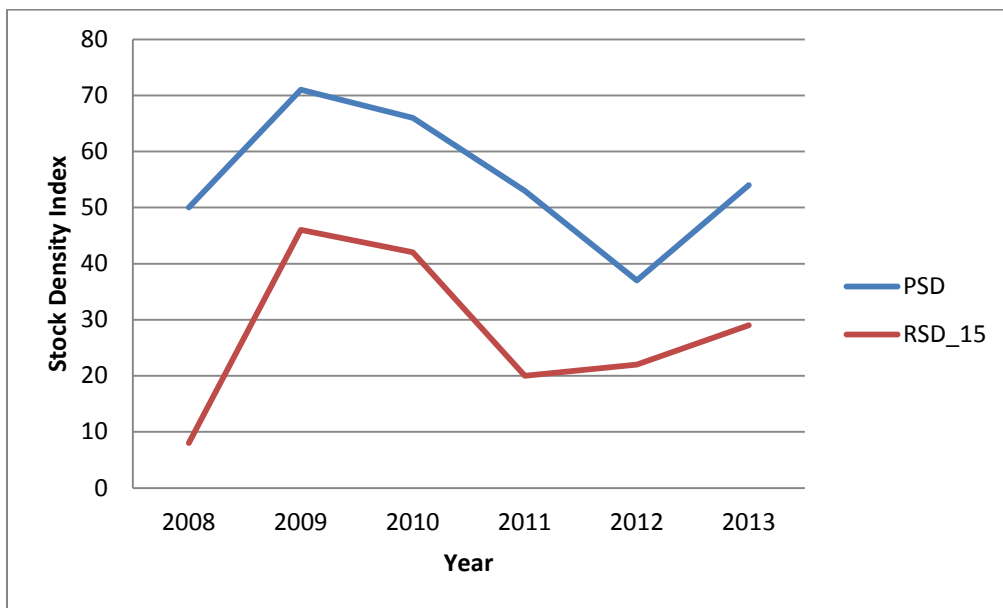


Figure 3. Proportional stock density and relative stock density of largemouth bass caught in spring electrofishing samples throughout the NOCP lagoon system.

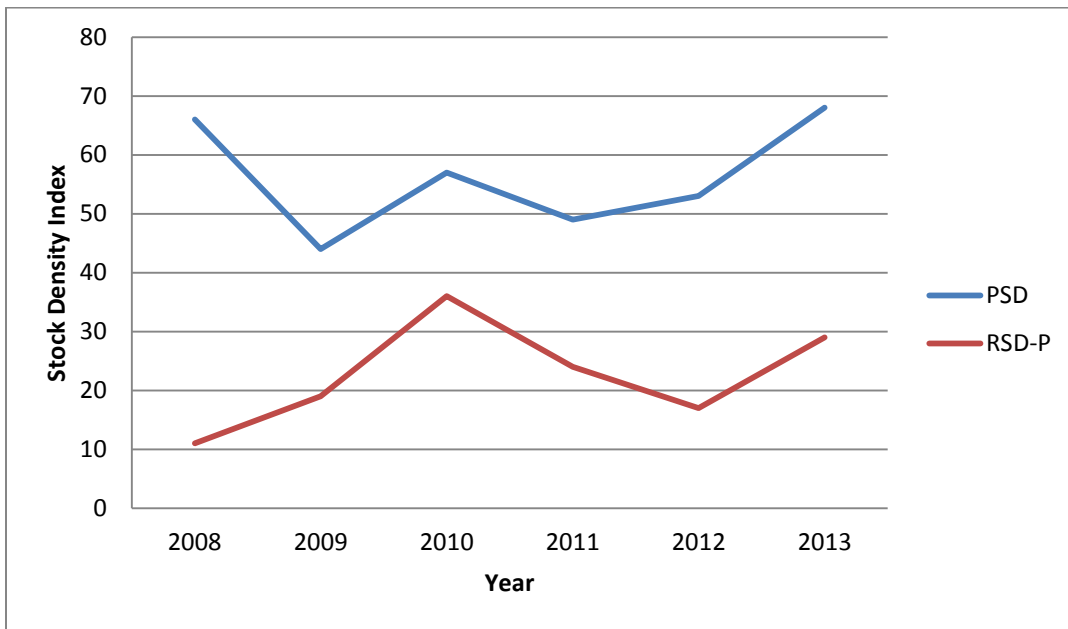


Figure 4. Proportional Stock Density of largemouth bass caught in fall electrofishing samples throughout the NOCP lagoon system.

Table 1. Freshwater fishes that have been collected in the NOCP lagoon system.

Freshwater Species	
<i>Lepomis miniatus</i>	red spotted sunfish
<i>Lepomis gulosus</i>	warmouth
<i>Lepomis microlophus</i>	redeer sunfish
<i>Lepomis macrochirus</i>	bluegill
<i>Gambusia affinis</i>	western mosquitofish
<i>Micropterus salmoides</i>	largemouth bass
<i>Lepisosteus oculatus</i>	spotted gar
<i>Lepisosteus osseus</i>	longnose gar
<i>Dorosoma petenense</i>	threadfin shad
<i>Ictiobus bubalus</i>	smallmouth buffalo
<i>Ictalurus furcatus</i>	blue catfish
<i>Ameiurus natalis</i>	yellow bullhead
<i>Ictalurus punctatus</i>	channel catfish
<i>Herichthys cyanoguttatus</i>	Rio Grande cichlid
<i>Poecilia latipinna</i>	sailfin molly
<i>Menidia beryllina</i>	inland silverside
<i>Cyprinodon variegatus</i>	sheepshead minnow
<i>Dorosoma cepedianum</i>	gizzard shad
<i>Morone mississippiensis</i>	yellow bass

Note: Crappies are not a significant component of the NOCP lagoon system fish population.

*Forage*



Forage availability is measured directly through electrofishing and shoreline seine sampling and indirectly through measurement of LMB body condition. Relative weight (Wr) is the ratio of a fish's weight to the weight of a "standard" fish of the same length. The index is calculated by dividing the weight of a fish by the standard weight for its length, and multiplying the quotient by 100. LMB relative weights below 80 indicate a potential problem with forage availability. Relative weights for LMB in NOCP are between 80 and 100 for all size groups, indicating sufficient forage that is available to predation (Figure 5).

Forage samples are collected in the fall. In NOCP, 0.25 hours of electrofishing effort for forage was conducted at each of 4 sample stations in years 2011-2013. Forage sample results provided in Table 2 only includes fish of 6 inches in total length or less. Crawfish, snails and other invertebrates also provide forage.

The Rio Grande cichlid does not appear to be negatively impacting the bluegill population. However, additional monitoring is necessary to propose conclusions regarding the effects of this invasive species on native populations.

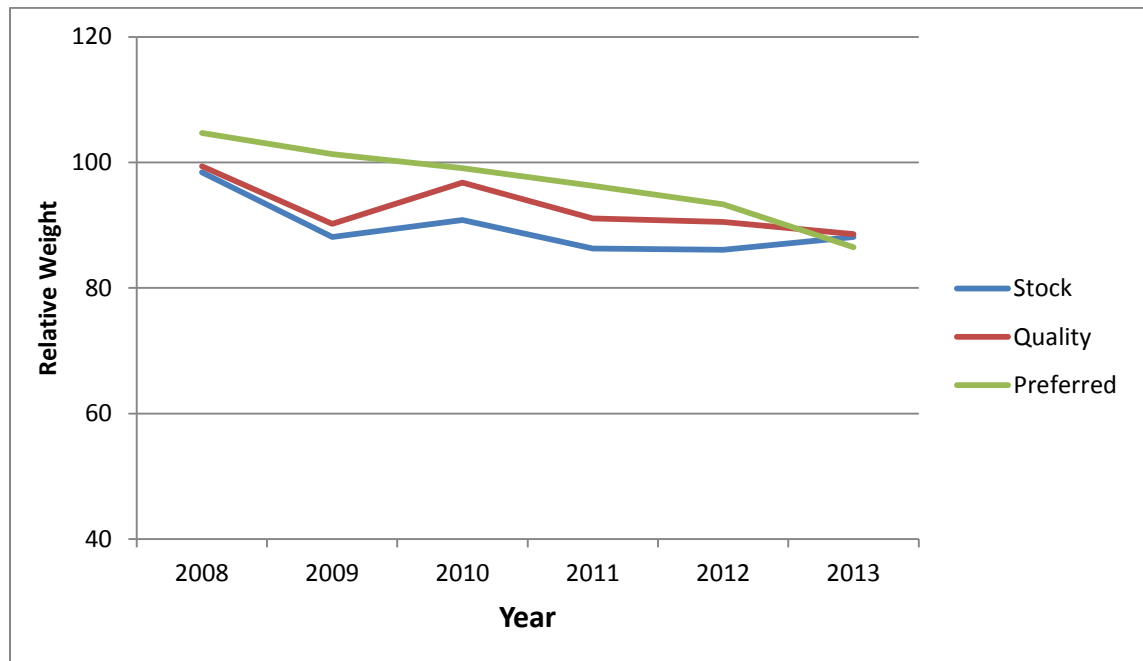


Figure 5. Mean relative weights by size class of largemouth bass caught throughout the New Orleans City Park lagoon system in electrofishing samples for fall 2008-2013. 2008 (n = 85), 2009 (n = 107) 2010 (n = 14), 2011 (n = 123), 2012 (n = 63), and 2013 (n = 34).

Table 2. Mean CPH of forage fish (< 6 inches) collected standard forage samples.

Species	2011	2012	2013
LMB	28	11	13
Bluegill	59	30	74
Gizzard shad	0	0	4
Threadfin shad	69	61	4
Rio Grande Cichlid	5	0	8
Inland Silverside	0	64	60
Yellow bass	5	0	0
Warmouth	7	0	0

### Species of Special Concern

Invasive fish species - Rio Grande Cichlid (*Herichthys cyanoguttatus*)

The presence of blue or blue-green iridescent to whitish spots covering the head and body distinguish this species from members of the genus *Lepomis* (Fuentes and Cashner 2002).

The Rio Grande Cichlid is the only cichlid species native to the United States. Its native distribution is limited to the southernmost drainages in Texas (Fuller et al., 1999). The first specimen was found in southeastern Louisiana in 1996. The species has become progressively more common in the waters in and around New Orleans (Lorenz 2008). Known commonly as the “Texas Blue” in the aquarium trade, this fish breeds readily in aquaria and in the wild. It is suspected that the introduction of this species in the Greater New Orleans Metropolitan Area (GNOMA) is a result of intentional introductions (O’Connell et al., 2002). Some pet owners have admitted to dumping these and other species of ornamental fish into New Orleans area waters (Lorenz, per. Comm.).

The Rio Grande Cichlid has high tolerances to salinity, temperature fluctuations, and natural disturbances such as hurricanes (Lorenz 2008). Distribution patterns suggest that these fish are more successful in disturbed, poor water quality environments (i.e., manmade canals, ditches, etc.) than in natural waterbodies. Lorenz 2008 documents aggressive behavior between *H. cyanoguttatus* and *Lepomis macrochirus* in laboratory experiments. Similar behavior was observed in Florida where *H. cyanoguttatus* and *L. macrochirus* competed for breeding grounds (Courtenay et al., 1974). In addition, Mire 2001 observed a substantial decrease in reproductive success by *Cyprinodon variegates* (sheepshead minnow) in the presence of aggressive *H. cyanoguttatus*.

Recent forage surveys conducted by LDWF indicate the Rio Grande cichlid population has declined (Table 3). These results concur with decreasing catches reported by anglers.

Table 3. CPUE of Rio Grande cichlids collected during forage sampling efforts.

Year	Number per Hour	Number of Samples
2009	208	2
2010	24	1
2011	9	4
2012	4	4
2013	8	4

Invasive mollusk – Channeled apple snail (*Pomacea canaliculata*)

Channeled apple snails were found in the northern lagoons in 2013. The snails consume aquatic vegetation and may be a threat to aquatic habitat. No assessment of population abundance has been conducted.

## **HABITAT EVALUATION**

### Aquatic Vegetation

Nuisance aquatic vegetation is controlled by salt water that is pumped from Bayou St. John. No vegetation type map sampling has been conducted to date.

### Substrate

Under permanent impoundment, organic material sinks to the bottom of the City Park lagoons where it is subject to anaerobic decomposition. The slow rate of aerobic decomposition has resulted in an accumulation of organic material on the water bottom.

### Complex Cover

Fallen trees, stumps, tree roots, broken concrete, and rocks provide complex cover in the lagoon system.

## **CONDITION IMBALANCE / PROBLEM**

1. Dissolved oxygen is sometimes low to the point of stress for fish.
2. Salinity is sometimes higher than desirable for freshwater fishes.
3. Invasive species threaten the native fish population through competition and damage to habitat.

## **CORRECTIVE ACTION NEEDED**

1. Impacts from invasive species require further evaluation.
2. An increased supply of fresh water is needed.
3. Increased spawning substrate is needed for nesting game fish species.

## RECOMMENDATIONS

1. The existing fresh water supply should be increased and baffled to decrease salinity and increase dissolved oxygen. The concept of baffling water can easily be adapted to aesthetically pleasing structures. Water discharged from the 3,000 gpm pump east of Big Lake should be baffled to increase gas exchange and improve water quality.
2. Construct spawning beds for nesting game fish. The construction of sand or gravel beds is possible with the use of a small barge and a tractor mounted front end loader (Figures 6 and 7). Smaller beds ( $< 100 \text{ ft}^2$ ) are recommended to match the solitary preferences of largemouth bass and to discourage use by the invasive Rio Grande cichlid.
3. Continue to monitor the effects of adult marsh bass, introduced into the system to reduce the cichlid population.
4. Develop a “put and take” fishery for unskilled anglers to promote interest and use of the lagoon system. Dedicate an area, isolated from surrounding waters, for beginning and unskilled anglers. The area below the dam in the southern lagoon system is ideal for this recommendation. Improved fishing success can be accomplished through replacement of the existing fish population with hybrid sunfish and channel catfish.

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<http://www.legis.state.la.us/lss/lss.asp?doc=105196>



Figures 6 and 7. Barge used to spread pea gravel to create spawning habitat for nesting fishes.